

We thank the editor and the anonymous reviewer for the encouraging comments and constructive suggestions on the manuscript. Below, we explain how the comments and suggestions are addressed and make note of the revisions in the revised manuscript. The reviewer's comments are in blue color. Our replies are in black, and our corresponding revisions in the manuscript are in red.

Editor Comments

This study provides a comprehensive evaluation of the spatiotemporal variations of dust extinction profiles and dust optical depth simulated by several GCMs against satellite retrievals from Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP), Moderate Resolution Imaging Spectroradiometer (MODIS), and Multi-angle Imaging SpectroRadiometer (MISR). The study provides a quantitative analysis of the importance of representing dust emission, deposition processes, and size distribution in GCMs for capturing observed dust spatiotemporal distributions. The study also discusses discrepancies among the satellite products.

Dust particles play important roles in the climate, and its understanding and accurate simulation is important to advancing climate models and their predictions. The authors have presented an excellent analysis of this topic, helpful to the climate modelers. The manuscript is well written and results are clearly presented. The study is a valuable contribution to advancing modeling of dust in climate models.

Reply: We thank the editor for the encouraging comments. We revised the manuscript according to the anonymous reviewer's comments and suggestions.